

Wetland Compensation Plan

FAP 662 (Veterans Parkway)
J. David Jones Parkway to Business 1-55
Springfield, Sangamon County, Illinois

Prepared by
Illinois Department of Transportation
January 1995

I. Introduction

This report describes the Illinois Department of Transportation (IDOT) plan to compensate for unavoidable wetland losses associated with construction of FAP 662, Veterans Parkway in Sangamon County, Illinois. Details of the wetland impacts are presented in the technical report prepared by the IDOT (1992).

A 2.8-ha (6.8-ac) scrub-shrub wetland will be lost as a result of constructing FAP 662. Approximately 1.9 ha will be filled and the remaining 0.9 ha will be drained. Field investigations indicate that the scrub-shrub wetland was used as a junkyard at one time. The wetland's relatively small watershed (about 6.0 ha) gives it a high level of effectiveness for flood flow alteration and a high level of opportunity for sediment/toxicant retention (IDOT 1992).

Wetland losses will be compensated for on-site, in- and out-of-kind, and at a 1:1 ratio. The site acquired for wetland compensation is 6.5 ha (16 ac) and is located approximately 402 m (1320 ft) north of Browning Avenue and immediately west of Spring Creek. The site's legal description is the NW/4, SW/4, Section 15, T.16 N., R. 5 W. (Attachment 1).

II. Site Inventory and Analysis

A. Inventory

The compensation site was examined in the field by the Illinois Natural History Survey (INHS 1992) (Attachment 2). Soil mapping by the Soil Conservation Service (1980) was verified and vegetation was characterized. The 1987 Army Corps of Engineers Wetland Delineation Manual was used to identify and delineate jurisdictional wetlands. No wetlands were located.

The site is level to gently rolling (0-2% slopes) and is located in the Spring Creek floodplain. Approximately ninety percent of the site is farmed. The Creek and a ribbon of riparian forest borders the site on three sides. The dominant species of tree and sapling is silver maple (*Acer saccharinum*).

Two soil types are mapped at the compensation site, Camden silt loam (map unit symbol 134A) and Tice silty clay loam (284) (Attachment 3). Camden is a Typic Hapludalf and Tice is a Fluvaquentic Hapludoll. Camden soil is on a stream terrace and Tice is on a slightly lower position next to the creek. Tice soil is subject to occasional flooding for brief periods March through June. Neither soil type is hydric. No hydric inclusions were located.

B. Analysis

Because there are no degraded wetlands within the site the opportunity for restoration does not exist. Therefore, compensation will occur via creation. Because the site is gently rolling and Tice soils are somewhat poorly drained, the chances of successfully creating a wetland at the proposed compensation site are good.

III. Project Goals and Objectives

The following goals and objectives are proposed for the Veterans Parkway wetland compensation:

1. Create a 6.8-acre wetland. The objective is to create a wetland by way of earth excavation.
2. Create a variety of wetland types. The objective is to create wet floodplain forest, scrub-shrub, and shallow open water communities.
3. Replace lost wetland functions resulting from construction of Veterans Parkway. The objective is to provide flood flow alteration and sediment/toxicant retention.
4. Provide wildlife habitat. The objective is to create nesting habitat for waterfowl and other resident bird species.

IV. Landscape Plan

Grading and planting plans for the FAP 662 wetland compensation are presented on Attachments 4 and 5.

The boundary for the proposed wetland follows the construction limits at the southern end of the site and the 520 ft contour at the northern end. Semi-permanent open water shall be at or below elevations of 514 ft and the maximum water depth shall be 0.6-0.9 m (2-3 ft). Approximately 77,950 m³ (101,950 yd³) of soil shall be excavated and the created wetland shall provide equal flood flow alteration or stormwater storage (Sudduth 1995).

Of the total 6.5 ha (16 ac) of land acquired for wetland compensation, approximately 3.5 ha (8.6 ac) is proposed for wetland creation. The remaining 3.0 ha will be used for buffer, or floodplain forest enhancement. The following wetland types and acreages are proposed for creation: 1.3 ha (3.3 ac) open water, 0.7 ha (1.6 ac) scrub-shrub, and 1.5 ha (3.7 ac) wet floodplain forest. Scrub-shrub wetland shall occupy the zone between elevations 514 and 515 ft and floodplain forest shall occupy roughly the zone between 515 and 520 ft. Native plants are proposed for establishment in each zone (Table 1).

Table 1. Species mix for the FAP 662 wetland compensation

Scientific Name	Common Name	Indicator Status
Wet floodplain forest		
<i>Carya laciniosa</i>	shellbark hickory	FACW
<i>Fraxinus pennsylvanica</i>	green ash	FACW
<i>Platanus occidentalis</i>	sycamore	FACW
<i>Quercus bicolor</i>	swamp white oak	FACW+
Scrub-shrub		
<i>Cephalanthus occidentalis</i>	buttonbush	OBL
<i>Cornus obliqua</i>	pale dogwood	FACW+
<i>Cornus stolonifera</i>	red osier	FACW

No plantings are specified for the shallow, open water zone. The hydrology of this zone shall be observed for at least one year before any planting is done. Herbaceous plants in the existing floodplain forest are expected to volunteer and colonize the herb layer of the wet floodplain forest and scrub-shrub wetlands. Virginia wild rye (*Elymus virginicus*) (FACW-) and wood nettle (*Laportea canadensis*) (FACW) are the dominant herbs in the forest along Spring Creek.

Floodplain forest along Spring Creek shall be enhanced through management practices aimed at improving vegetation structure and species composition. No plantings are proposed for areas of existing floodplain forest. Mesic prairie (IDOT Class 4 and 5) shall be seeded on the road embankment adjacent to the wetland compensation.

V. Construction

A. Earthwork

In the excavation, topsoil shall be scraped and stockpiled. Topsoil consists of material at the ground surface to a depth of 30 cm (12 in). The stockpiled topsoil shall be placed on top of the finished excavation. Consequently, the excavation shall go 30 cm deeper than finished elevations shown on the grading plan, in order to accommodate topsoil placement. Bulk density moist of the topsoil shall be 1.2 - 1.4 g/cc (0.69 - 0.81 oz/in²).

B. Erosion Control

The excavated area shall be seeded with a temporary cover; the installation, maintenance, and regular inspection of which shall be the responsibility of the contractor.

Seed shall be in the ground no later than seven days following completion of earthwork. Two cover types are specified (Table 2). Seed shall be mechanically drilled and covered with a drag or harrow. Seed shall meet the requirements of Article/Section 781.04*.

*Article/Section numbers are referenced to the IDOT manual, *Standard Specifications for Road and Bridge Construction* (1994).

Table 2. Species selection for erosion control

<u>Species</u>	<u>Rate</u>	
	<u>kg/ha (lb/ac)</u>	
UPLAND AND WET FLOODPLAIN FOREST ZONES		
perennial ryegrass	55	(50)
oats, spring	70	(64)
OPEN WATER* AND SCRUB-SHRUB ZONES		
Polygonum pensylvanicum	2.25	(5)
Polygonum punctatum	2.25	(5)

[†] Seed only under dry or moist soil conditions.

C. Landscaping

Mesic prairie shall be seeded and wet floodplain forest and scrub-shrubland shall be planted.

1. Seeding

a. Description

This work shall consist of placing the seed in the ground. No fertilizer or agriculture ground limestone application is required, as specified in Article 250.04.

b. Materials

Seed shall be local ecotypes and the native grass and forb mixtures, Class 4 and 5, shall conform to Article/Section 781.04 (7).

c. Equipment

A rangeland type grass drill shall be used for seeding and it shall meet the requirements of Article/Section 801.08 (g).

d. Seeding Methods

Seeding methods shall follow specifications in Article 250.06 and Section (b), interseeding.

e. Seeding Mixtures

Seeding mixtures for mesic prairie, IDOT Class 4 and 5, shall follow Article 250.07.

2. Planting Woody Plants

a. Description

This work shall consist of furnishing, transporting, and planting trees and shrubs. The work shall also include watering and replacement of plants when required, and all work described in the following sections.

b. Planting Time

Plants must be dormant when delivered to the storage or project site. Bare-root plants shall be planted only when the air temperature exceeds 2° C (35° F).

c. Construction

Construction activities shall follow Articles 253.04, 253.05, 253.06; digging, transportation, and temporary storage of plants.

d. Layout of Planting

Layout of planting shall follow the planting plan. All plantings shall be mixed species. Trees and shrubs shall be planted on 3 m (10 ft) and 1.5 m (5 ft) centers, respectively.

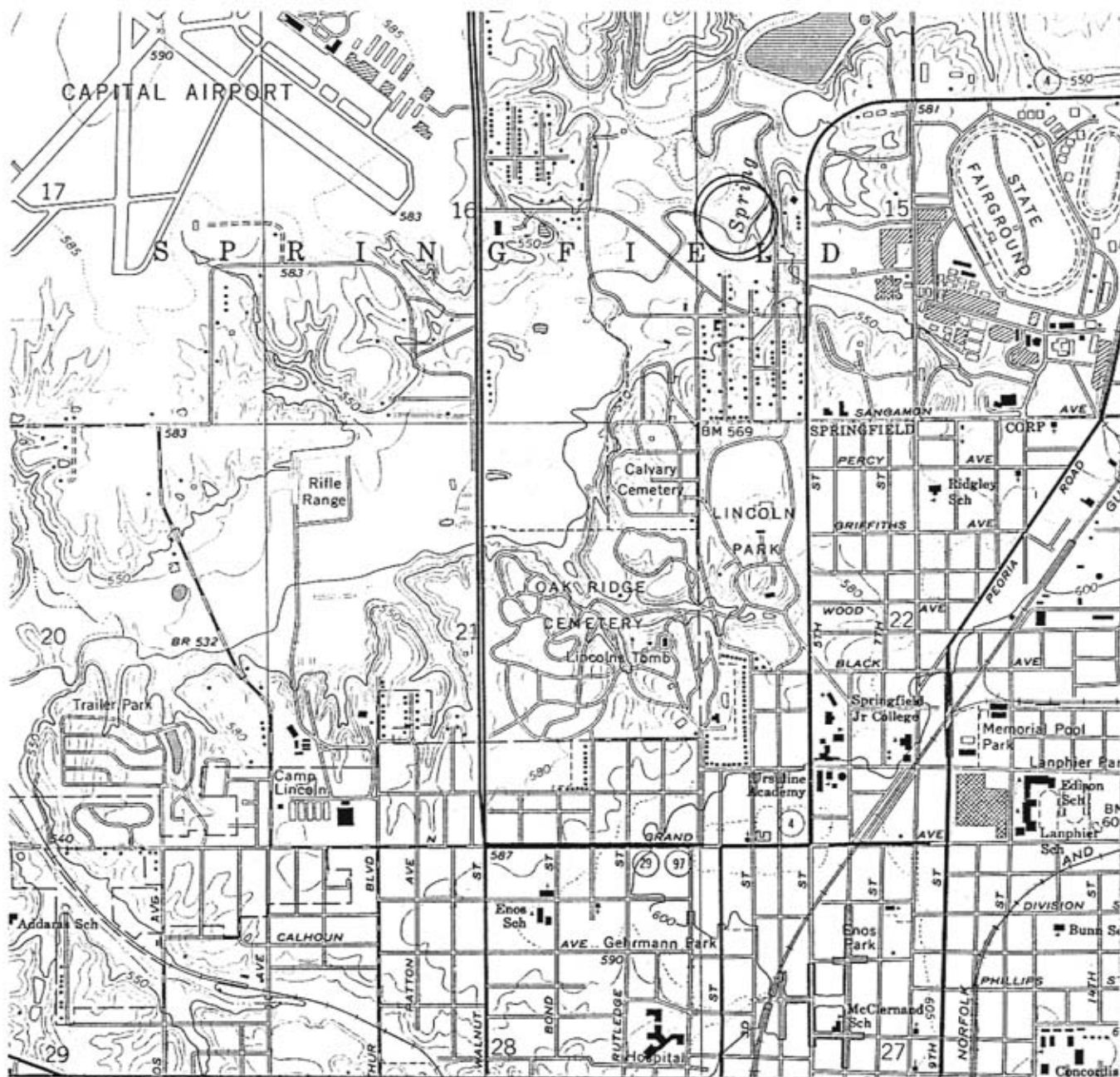
References

Illinois Department of Transportation. 1994. Standard specifications for road and bridge construction. 922 pp.

Illinois Department of Transportation. 1992. Wetland report: FAP 662 Veterans Parkway, J. David Jones Parkway to Business I-55, Springfield, Sangamon County, Illinois. 11 pp. + tables and exhibits.

Soil Conservation Service. 1980. Soil survey of Sangamon County, Illinois. 139 pp. + maps.

Sudduth, Willard. 1995. Personal communication. Homer L. Chastain and Associates, Consulting Engineers. Decatur, Illinois.



Attachment 1. Location of the FAP 662 wetland compensation site (circled).

Attachment 2. Wetland mitigation site assessment by the
Illinois Natural History Survey.

TRANSMITTAL FORM

WETLAND MITIGATION SITE ASSESSMENT

To: Bureau of Location and Environment
Attn: Charles Perino
From: IDOT District 6
Re: Mitigation site along Veterans Parkway, Sangamon County

Route and Location

Mark: At approximately station 65
Route: FAP 662 (Veterans Parkway)
County: Sangamon
Location: Approximately 1/4 mi north of Browning Road, immediately west of Spring Creek
Project Size: 7.5 acres

Survey Conducted By: Marilyn Morris and Thomas Brooks
Center for Biogeographic Information
Illinois Natural History Survey
607 East Peabody Drive
Champaign, Illinois 61820
(217) 333-2948 and 244-1730

Date Conducted: 26 August 1992

Project Summary:

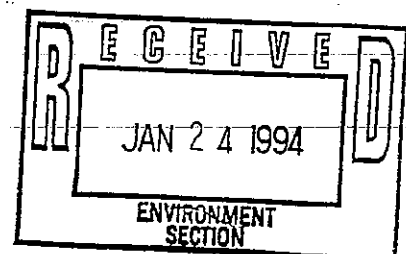
The following report presents information concerning the proposed mitigation site along FAP 662 (Veterans Parkway), north of Springfield in Sangamon County. The report includes a summary of the following topics: wetland delineations, evaluation of original wetland, mitigation site assessment, evaluation of the mitigation plan, and proposed mitigation goals. The mitigation site assessment evaluates the site based on the following criteria: land use and vegetation (past and present), existing hydrology, present soil characteristics, wildlife use, and wetland creation and restoration potential. The mitigation plan evaluation includes a discussion of recommendations to consider in the planning stages, including appropriate plant species, that should result in a more successful wetland construction project. The final section presents four project goals for the mitigation site.

Signed:


Dr. Warren U. Brigham
INHS/IDOT Project Coordinator

Date:

15 November '92



M E M O R A N D U M

WETLAND MITIGATION SITE ASSESSMENT

TO: Charles Perino
FROM: Marilyn Morris and Thomas Brooks
DATE: 18 November 1992
RE: Wetland mitigation site: FAP 662 (Veterans Parkway)
At approximately station marker 65
Sangamon County
Date investigated: 26 August 1992

1. Wetland Delineation

Characteristics of vegetation, soil, hydrology, and topography were evaluated to determine the boundaries of wetlands already existing in the project area identified as the mitigation site. Information from the following sources was used to perform an on-site survey: United States Geological Survey topographic map and National Wetlands Inventory (NWI) map (Springfield West 7.5 minute quadrangle); the *Soil Survey of Sangamon County, Illinois* (Soil Conservation Service 1980); *National List of Plant Species that Occur in Wetlands: Illinois*; aerial photograph; and the 1987 *Army Corps of Engineers Wetland Delineation Manual*.

All potential wetlands within the project area were examined. No jurisdictional wetlands were found within the potential mitigation site.

2. Evaluation of Original Wetland

Comments concerning the original wetland are compiled from the following sources: biological and wetland survey for the FAP 662 corridor completed by personnel at the Illinois Natural History Survey (INHS) and submitted to the Illinois Department of Transportation (IDOT) in February 1990; Wetland Report completed by the IDOT in March 1992; and an on-site survey of the area on 26 August 1992. In the INHS survey, a wet shrubland (in part coded by the NWI as an excavated, semipermanently flooded, emergent, palustrine wetland - PEMFx) totalling 6.8 acres was determined to be a jurisdictional wetland.

The wet shrubland was described in the INHS report as a degraded marsh used as a salvage yard and dump composed predominantly of shrub thickets interspersed with open areas and temporary ponds. The wetland was dominated by disturbance-adapted wetland species. Occasional saplings were *Acer negundo*, *Populus deltoides*, and *Salix nigra*. Dominant shrubs were *Salix exigua* and *Salix nigra*, with *Acer negundo*, *Cornus drummondii*, *Morus alba*, *Populus deltoides*, and *Prunus serotina* occurring occasionally. Dominant herbaceous vegetation was *Leersia oryzoides*, *Solidago canadensis*, and *Typha latifolia*. Occasional herbs included *Agrostis alba*, *Amaranthus tuberculatus*, *Apocynum sibiricum*, *Asclepias incarnata*, *Bidens* sp., *Carex* sp., *Echinochloa* sp., *Elymus virginicus*, *Geum laciniatum*, *Helianthus annuus*, *Muhlenbergia racemosa*, *Phalaris arundinacea*, *Poa pratensis*, *Polygonum coccineum*, *P. lapathifolium*, *Scirpus atrovirens*, and *Typha latifolia*. A more complete species list, with additional species observed on our 1992 site survey, is presented in Table 1.

Table 1. Plant species occurring within the project area and in nearby cover types.

A. cropland (entire project area and extending to the west):

- tree-occasional - *Acer saccharinum*
- herbaceous-dominant - *Glycine max* (planted)
- herbaceous-occasional* - *Echinochloa crusgalli*, *Populus deltoides* (seedling)

B. floodplain forest (along Spring Creek):

- tree-dominant - *Acer saccharinum*
- trees-occasional - *Celtis occidentalis*, *Juglans nigra*, *Tilia americana*, *Ulmus americana*
- saplings-dominant - *Acer saccharinum*, *Ulmus americana*
- sapling-occasional - *Celtis occidentalis*
- woody vine-occasional - *Smilax hispida*
- herbaceous-dominant - *Elymus virginicus*, *Laportea canadensis*
- herbaceous-occasional - *Ambrosia trifida*, *Aster simplex*, *Campsis radicans*,
Menispermum canadense, *Muhlenbergia cf. frondosa*,
Polygonum virginianum, *Sanicula odorata*, *Setaria faberi*,
Stachys tenuifolia, *Viola papilionacea*

C. wet shrubland (original wetland):

- saplings-occasional - *Acer negundo*, *Populus deltoides*, *Salix nigra*
- shrubs-dominant - *Salix exigua*, *S. nigra*
- shrubs-occasional - *Acer negundo*, *Cornus drummondii*, *Morus alba*, *Populus deltoides*, *Prunus serotina*, *Salix discolor*
- herbaceous-dominant - *Leersia oryzoides*, *Solidago canadensis*, *Typha latifolia*
- herbaceous-occasional - *Agrostis alba*, *Amaranthus tuberculatus*, *Apocynum sibiricum*, *Asclepias incarnata*, *Bidens aristosa*, *Carex annectens*, *C. frankii*, *C. normalis*, *Cyperus strigosus*,
Echinochloa sp., *Elymus virginicus*, *Epilobium coloratum*,
Geum laciniatum, *Glyceria striata*, *Helianthus annuus*,
Lysimachia nummularia, *Lythrum alatum*, *Muhlenbergia racemosa*, *Phalaris arundinacea*, *Poa pratensis*,
Polygonum coccineum, *P. lapathifolium*, *Rumex crispus*,
Scirpus atrovirens, *Typha latifolia*, *Urtica dioica*

*species occurring in isolated depressions within field

Soils at the site were Sawmill silty clay loam and Sexton silt loam, both considered hydric in Sangamon County. The presence of wetland hydrology was indicated by saturated soils, evidence of ponding during the growing season, and by the landscape position in a small basin in the floodplain.

To evaluate the functions and values that the site possesses, IDOT personnel completed the U. S. Corps of Engineers Wetland Evaluation Technique (WET ID) for the site. Results indicated that the wetland has a high potential for flood flow alteration and a high capacity for sediment/toxicant retention. It does not provide habitat for threatened or endangered species and is not very suitable for waterfowl, nor does it possess any unique characteristics with respect to other wetlands in the watershed.

This wet shrubland could be a source of wetland plants or soil for limited use at the restoration site. Because the wetland is composed largely of weedy wetland plants, the value of the site for use at the wetland creation site is relatively low floristically. Access to the site could be difficult because of the uneven terrain created by past landfill activities. In addition, some soils may be contaminated by these activities. The best approach may be to identify the highest quality locations within the overall site and focus on salvaging plants and soil from that unit.

3. Mitigation Site Assessment

The mitigation site was evaluated regarding its potential as a created wetland. Past and current land use and vegetation, existing hydrology, present soil characteristics, current and potential wildlife use, and wetland creation and restoration potential are discussed in this evaluation. Most of the following information was collected by the authors during the site survey. Many additional sources of information were used to complete the assessment: aerial photograph, topographic map and NWI map (Springfield West 7.5 minute quadrangle), the *Soil Survey of Sangamon County, Illinois* (Soil Conservation Service 1980), and personal communication with James Miner (hydrologist at the Illinois State Geological Survey) and with the landowner. A photographic record of the site was taken from four fixed locations so that changes at the site can be documented over time. These photographs are included with this report and the reference sites are marked on the accompanying aerial photograph.

Land use and vegetation (past and current)

In pre-settlement times, the site was most likely a floodplain forest. No original vegetation communities remain on the site, which has been farmed for many years. Most recently the site has been planted with corn or soybeans, and was planted with soybeans in 1992. The mitigation site is surrounded on three sides by Spring Creek, including a narrow strip of riparian vegetation (about 25 ft wide) growing along the creek. Cover types have been mapped for the site and adjacent land (including the wet shrubland to be destroyed) on the accompanying aerial photograph. Cover types present include cropland (A), floodplain forest (B), wet shrubland (C), and Spring Creek (D). Incomplete species lists for each vegetated cover type have been included in Table 1.

Carpenter Park, which includes an Illinois Nature Preserve and an Illinois Natural Areas Inventory site, is located within 2 mi northeast of the project area. This site supports a high quality wet-mesic floodplain forest, dominated by old growth sycamore, silver maple, cottonwood, and box elder trees. Although plant materials for restoration cannot be collected from the area, the forest serves as a model of pre-settlement vegetation typical to the restoration site that can be integrated into a restoration plan.

In addition to the wet shrubland described in the previous section, the floodplain forest northeast of the mitigation site and within the proposed right-of-way is a potential source for obtaining seed, sod, plants, or seed bank (donor soil) for use at the mitigation site. These areas are not jurisdictional wetlands but support dominant hydrophytic vegetation. In addition, outside of the project area many palustrine wetlands have been identified by the NWI (see attached map). These sites include forested wetlands, scrub-shrub wetlands, and emergent wetlands. Because the mitigation wetland is constructed to receive floodwaters from Spring Creek, some plant propagules from these sites will wash into the area during floods or may be transported to the area by visiting waterfowl, and may become naturally established. To date, no surveys of these nearby areas have been requested or completed. If surveys are requested, any appropriate sites could be identified and the possibility of harvesting seeds or plugs from these existing sites could be evaluated.

Existing hydrology

The major hydrological inputs to the mitigation site are sheet flow from the higher land to the west, precipitation, and overflow from Spring Creek. During periods of heavy rainfall, flow in the creek appears to be affected by the Sangamon River downstream of the site. At those times, water will back up and inundate the site. The landowner reported that standing water usually was present during periods of heavy rain in the spring, but that water drained from the site in less than one week. Small depressions where water may remain for longer periods are scattered within the crop field. The major hydrological output is sheet flow from the site to the creek, with a lesser amount of water leaving the site as evapotranspiration or through ground water recharge. We did not see any evidence of drainage tiles in place within the field.

Spring Creek surrounds the mitigation site on the northeast, southeast, and southwest sides. On our survey date, this creek had the following characteristics: entrenchment was approximately 6 ft; the creek channel was approximately 30 ft wide; flow was negligible with no obvious direction; no riffles were exposed; and refrigerators, tires, and other large garbage items were deposited along the banks. The wetland mitigation site is located on very level land, with slopes from 0 to 2%. Within the field, slight undulations and isolated depressions are present.

Currently, the site receives heavy silt loads both from flood water from Spring Creek and from sheet flow from the higher land. In the constructed wetland, precautions should be taken that lessen the silt load into the palustrine areas and open water area. Heavy silt loads will decrease the water-holding capacity of the wetland and will lower the water quality and plant diversity at the site.

Present soil characteristics

The *Soil Survey of Sangamon County, Illinois* (Soil Conservation Service 1980) shows two soil types mapped in the proposed wetland restoration site, Camden silt loam on 0 to 2% slopes and Tice silty clay loam on 0 to 3% slopes. Soil mapping was checked and verified by a soil scientist (Thomas Brooks) on our survey date. No soil inclusions were found within either of the two mapping units.

The Camden series consists of deep, well drained, moderately permeable soils on loess-covered stream terraces. These soils formed in 24 to 36 inches of loess or silty material and in the underlying loamy outwash. The Tice series consists of deep, somewhat poorly drained, moderately permeable soils on flood plains. These soils formed in recent alluvial deposits.

Tice soils are not hydric, but inclusions of hydric soils can be present. Tice soils are subject to occasional flooding for brief periods in spring (March through June). Water and air move through this soil at a moderate rate. The available water capacity is high. During March through June, the water table is within 1 to 3 ft of the surface. This soil is rated "fair" for supporting wetland plants, providing shallow water areas, and for providing wetland wildlife habitat. Tice soils are rated "severe" in all categories for sanitary facilities because of wetness. Seepage can be a problem in pond reservoir areas.

Camden soils are not hydric. These soils may flood for brief periods. Water and air move through this soil at a moderate rate. The available water capacity is high. The high water table is greater than 6 ft deep during all months of the year. If pond reservoirs, sewage lagoons, or trench sanitary landfills are placed in areas where the underlying material is sandy, seepage is a severe hazard. This soil is rated "poor" for supporting wetland plants, providing shallow water areas, and for providing wetland wildlife habitat.

Wildlife value

The site currently possesses little wildlife value. Migrating and overwintering Canada geese might use the site, probably for foraging on crop residue. Other wildlife that would currently use the site include common upland game that frequently use agricultural areas. The riparian forest along Spring Creek offers habitat in conjunction with forested areas across Spring Creek and as a wildlife dispersal corridor connecting larger segments of floodplain forest. Any type of native vegetation restoration could only improve the site for use by wildlife and would be especially valuable because it would add contiguous natural habitat to the existing forested areas. The near proximity to a major highway would be a limiting factor in the value of the site for wildlife and would exclude animals that do not habituate to highway noise, as well as create a risk for both wildlife and passing motorists.

Wetland creation or restoration potential

Successful creation of a jurisdictional wetland at this site is dependent on the establishment of the proper hydrologic conditions. For more detailed information concerning the potential hydrology of the site, we defer to later reports from the ISGS and the engineering consultants that will specifically address those concerns. Our comments about the success of the wetland creation project will be based on assumptions made from currently available information. Comments regarding the establishment of hydrophytic vegetation at the site will be presented in the following section.

4. Mitigation plan evaluation

The following comments and recommendations concerning the successful completion of this wetland creation project are based on information from the conceptual wetland mitigation plan as discussed in the Wetland Report completed by the IDOT in March 1992, in the Flood Plain Study completed in 1991, at a meeting held 9 October 1992 with IDOT, INHS, and ISGS personnel at the District 6 office in Springfield, and in telephone conversations with IDOT and ISGS personnel. These comments primarily concern the plans to establish wetland hydrology and native vegetation at the site.

Hydrology

The following comments are based on relatively limited information concerning the potential hydroperiod of the wetland creation site. The wetland is expected to receive water from overbank flooding (above elevation 520 ft) when Spring Creek is out of its banks, through the equalizing pipe connecting the wetland to Spring Creek at elevation 514 ft, from groundwater discharge at elevations below 512 ft, from precipitation, and from sheet flow from the immediately adjacent part of the embankment and the surrounding higher land. When Spring Creek is full to its banks, the wetland will be entirely flooded. At elevations between 514 ft (the level of the equalizing pipe) and 520 ft, the wetland will be flooded to some intermediate level. At elevations below 514 ft, according to the consulting engineer's plan drawing of the site, this area should be "normally inundated" up to 2 ft. Flood events above 514 ft should be similar to current floods that occur at the site now, with a quick recession of flood water as the creek levels decrease. Based on this information, we have divided the wetland creation site into three zones with different moisture regimes. Zone 1 is the wettest and extends from elevation 512 to 514 ft. Zone 2 is from elevation 514 to 515 ft; this zone is only about 25 ft wide on the south and east sides of the wetland, but widens to about 250 ft on the northwest side. Zone 3 is the driest area, and includes all acreage above elevation 515 ft.

Because the wetland is linked directly with fluctuations in stream levels, water levels in the wetland may fluctuate widely. Based on the stage-discharge data for Spring Creek at the wetland mitigation site, we know the 5-, 10-, 25-, 50-, and 100-year flood elevations. Knowledge of the 1- and 6-month, and 1- and 2-year elevations would provide more details about the expected fluctuations in the wetland, which would in turn aid in the design of the wetland vegetation plan. Our main concern is that frequent inundation with stream water may carry a heavy silt load into the wetland, and that the intended vegetation may have difficulty surviving where it is frequently inundated with silt-laden water for prolonged periods.

Vegetation

Based on the water regime zones described in the previous section, we have recommended species appropriate for each zone. All recommended species are native to Sangamon County and are the woody components of naturally occurring plant communities. Zone 1 will be restored to a wet shrubland; the vegetation will be dominated by several native wetland shrubs that are tolerant of prolonged flooding. Zone 2 will be restored to a wet-mesic floodplain forest, dominated by tree species that can tolerate regular flooding. Zone 3 will be restored to a mesic floodplain forest, dominated by tree species that are adapted to drier conditions, but can tolerate brief flooding. (Refer to Table 2 for complete list of recommended species.) Nearby high quality floodplain forests in Carpenter Park Nature Preserve can serve as a model for revegetation plans, especially regarding native plant community structure and composition.

Within Zone 1, shrubs should be planted on 3 to 5 ft centers (personal communication, Charles Gouveia, IDOT District 1). *Cephalanthus occidentalis* (buttonbush) should be planted in the wettest (deepest) part of the wetland, surrounded by aggregates of the other shrub species. Rather than interplanting individuals of the different species, the remaining shrubs should be planted in scattered aggregates of at least 15 shrubs per clump. In zones 2 and 3, trees should be planted at a density of no more than 300 trees per acre. After expected losses, the resulting density will approximate the structure of a mature floodplain forest, with 50 to 60 trees per acre.

Table 2. Plant species recommended for planting in the wetland creation site, including scientific name, common name, and wetland indicator status.

Zone 1: Wet shrubland (elevation 512 to 514 ft):

<i>Cephalanthus occidentalis</i>	buttonbush	OBL
<i>Cornus drummondii</i>	rough-leaved dogwood	FAC
<i>C. obliqua</i>	dogwood	FACW+
<i>C. stolonifera</i>	red osier dogwood	FACW
<i>Ribes americana</i>	American gooseberry	FACW
<i>Viburnum lentago</i>	nannyberry	FAC+

Zone 2: Wet-mesic floodplain forest (elevation 514 to 515 ft):

<i>Carya laciniosa</i>	hickory	FACW
<i>Betula nigra</i>	river birch	FACW
<i>Fraxinus pennsylvanica</i>	green ash	FACW
<i>Platanus occidentalis</i>	sycamore	FACW
<i>Quercus bicolor</i>	swamp white oak	FACW+
<i>Q. palustris</i>	pin oak	FACW

Zone 3: Mesic floodplain forest (elevation 515 to 520 ft):

<i>Carya cordiformis</i>	bitternut hickory	FAC
<i>Celtis occidentalis</i>	hackberry	FAC-
<i>Fraxinus americana</i>	white ash	FACU
<i>Juglans nigra</i>	black walnut	FACU
<i>Quercus macrocarpa</i>	bur oak	FAC-
<i>Tilia americana</i>	American basswood	FACU

In addition to the planted species in the wetland, we expect that after a few years many other species will be growing in the wetland, as a result of natural plant colonization. These include such common wetland tree species as *Acer saccharinum* (silver maple), *A. negundo* (box elder), *Populus deltoides* (eastern cottonwood), *Ulmus americana* (American elm), and various species of *Salix* (willows). These species will probably disperse into the area with flood waters from existing riparian areas along Spring Creek, thereby precluding any need to plant them intentionally in the restoration area. Many herbaceous species also will naturally colonize the restoration area, especially while the woody vegetation is young. Zones 2 and 3 will probably develop an herbaceous flora similar to that of the existing riparian forest community along Spring Creek. Zone 1 will probably develop an herbaceous flora adapted to wetter conditions and will include *Polygonum* spp. (smartweeds), *Bidens* spp. (stick-tights), *Aster* spp., and common floodplain grasses including *Leersia oryzoides* (rice cut grass), *Glyceria striata* (fowl manna grass), *Phalaris arundinacea* (reed canary grass), and *Echinochloa crusgalli* (wild millet). The latter two have the potential to dominate the site, thereby limiting the site's potential for supporting a more diverse native flora or fauna.

Because of the special concerns about the contamination of soils in the original wetland, the potential for using this area for donor soils is low. Based on the viewpoints of IDOT District 6 personnel voiced in the meeting of 9 October 1992, no other nearby wetland sites would be suitable for providing donor plants or soil.

Soils

Destruction to the soils should be kept to a minimum during the construction and planting phases to maintain the original structure and physical properties of the soil. If groundwater will be an important source of wetland hydrology at the site, then construction activities should be designed and performed to minimize soil compaction. Soil compaction can be minimized by fencing construction areas and by avoiding construction activities when soils are saturated. During the excavation of the wetland basin, the upper horizon of the soil (at least 1 ft) should be removed, stockpiled, and then reapplied at the site. A proper growing medium other than subsoil is necessary for successful plant establishment. In other wetland creation projects where wetland plants have been placed in a growing medium of exposed subsoils, desired plant establishment has been minimal and erosion has become a serious problem.

Additional comments

In general, the slopes of wetland creation projects should not be greater than 5 to 10% (*i.e.* 1:10 to 1:20, vertical to horizontal). For this project, the proposed slope of 10% (1:10) above elevation 514 ft should encourage successful establishment of hydrophytic vegetation over a wide area and should create conditions that are less conducive to soil erosion. Care should be taken during construction to ensure that these slopes are created as designed. Undulating or uneven shorelines can provide a greater range of water levels and microhabitats (including nesting sites) and can be integrated into the design of the wetland.

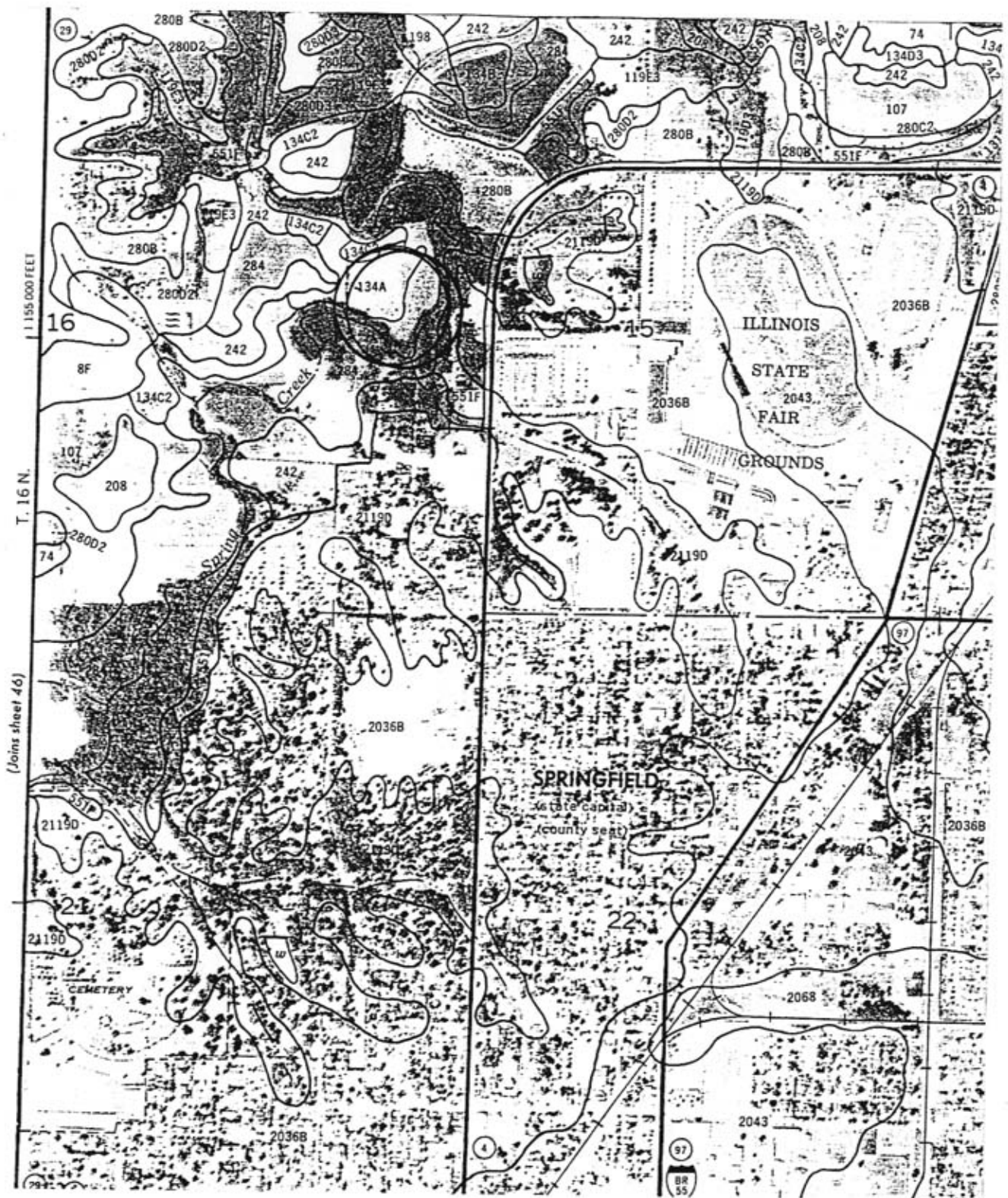
Minimizing silt loads and limiting the speed and sources of hydrologic input can help maintain high water quality. Silt loads at this location will probably be relatively high because the main source of water is from Spring Creek. In large part, the successful establishment of desired wetland vegetation is dependent on water quality. Plant species that are successfully established will be those that are tolerant of silt loads. Also, highway run-off entering the created wetland should be limited to water from the length of pavement immediately adjacent to the wetland.

5. Mitigation Goals

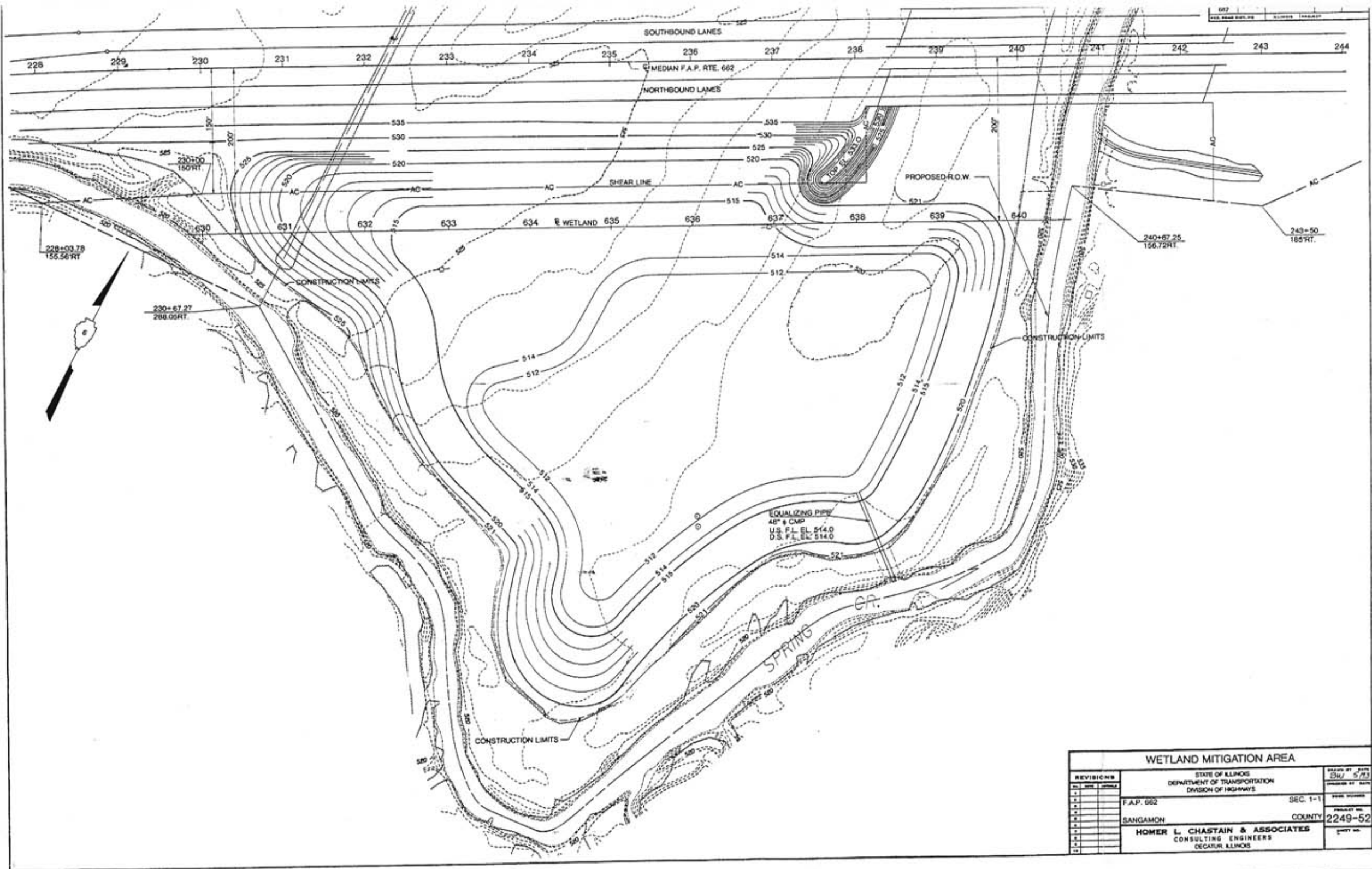
The following mitigation project goals are adapted from the goals listed in the Wetland Report completed by the IDOT in March 1992. Monitoring of the project area should be conducted for at least five years. Reports will be submitted yearly on the status of the created wetland and plant communities, and the likelihood of meeting the goals and success criteria. If at any time the monitoring team determines that the goals will not be met by the of the monitoring period, the team will make management recommendations to correct problems. The specifics of the project goals and minimum success criteria will need to be developed as more information about the project becomes available.

Project goals

1. Floodplain forest and wet shrubland plant communities totalling 7.5 acres will be established at the project site.
2. The floodplain forest and the wet shrubland plant communities will meet the criteria for a jurisdictional wetland.
3. The project area will provide flood storage capacity (amount to be determined).
4. Nesting habitat for waterfowl and other resident bird species will be created on the site.



Attachment 3. Soil map including the FAP 662 wetland compensation site (circled).



WETLAND MITIGATION AREA			
STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS		PROJECT NO. F.A.P. 662	SECTION SEC. 1-1
SANGAMON COUNTY		PROJECT NO. 2249-52	SECTION 2249-52
HOMER L. CHASTAIN & ASSOCIATES CONSULTING ENGINEERS DECATUR, ILLINOIS		DATE 5/13	